

CLAIMS

We claim:

1. A method of depositing chitosan onto a substrate, comprising:
 - 5 a) contacting the substrate with a solution containing chitosan; and
 - b) applying an electric current to the substrate sufficient to deposit the chitosan onto the substrate.
- 10 2. The method of claim 1, further comprising washing the substrate containing deposited chitosan with water, a solution with a neutral pH, a basic solution, or an acidic solution.
- 15 3. The method of claim 1, further comprising contacting chitosan deposited on the substrate with chitosanase.
4. The method of claim 1, wherein the substrate is a semiconductor.
5. The method of claim 1, wherein the substrate is a conductive polymer.
- 20 6. The method of claim 1, wherein the substrate is a metal.
7. The method of claim 1, wherein the solution contains chitosan in a concentration of from about 0.0001 to about 30 % w/v.
- 25 8. The method of claim 7, wherein the solution contains chitosan in a concentration of from about 0.1 to about 10 % w/v.
9. A material obtained by the method of claim 1.
- 30 10. A material comprising chitosan deposited on a substrate.

11. The material of claim 10, wherein the substrate is a metal, a semi-conductor, or a conductive polymer.

12. The material of claim 11, wherein the substrate is a metal.

5

13. The material of claim 12, wherein the metal is aluminum, antimony, cadmium, chromium, cobalt, copper, gold, iron, lead, magnesium, mercury, nickel, palladium, platinum, silver, steel, tin, tungsten, zinc, or an alloy thereof.

10

14. The material of claim 10, further comprising a protein bound to the chitosan.

15. The material of claim 10, further comprising an enzyme bound to the chitosan.

15

16. The material of claim 10, further comprising a polynucleotide bound to the chitosan.

17. The material of claim 16, wherein the bound polynucleotide is RNA.

18. The material of claim 16, wherein the bound polynucleotide is DNA.

20

19. The substrate of claim 10, further comprising cells bound to the chitosan.

25